

REMARKS

This response is intended as a complete response to the Final Office Action dated May 16, 2006. In view of the following discussion, the Applicants believe that all claims are in allowable form.

The Applicants thank the Examiner for her time and comments during the teleconference with Applicants' representative on July 14, 2006. The Applicants have nothing further to add to the comments provided by the Examiner in the Interview Summary mailed July 24, 2006.

CLAIM AMENDMENTS

The Applicants have amended claim 15 to more clearly recite aspects of the invention. The Applicants submit that the scope of this claim remains unchanged and that no new matter has been added.

CLAIM REJECTIONS

A. 35 USC §112 Claims 1-20

Claims 1-20 stand rejected under 35 USC. §112 for failing to comply with the written description requirement. In response, the Applicants have amended independent claims 1, 9, and 10 to more clearly recite aspects of the invention.

Specifically, claims 1, 9, and 10 have been amended to remove the term "substantially" as suggested by the Examiner. Claims 19 and 20 appear to be inadvertently grouped with the rejected claims, as the Examiner provides no reason for their rejection. Accordingly, the Applicants submit that claims 19 and 20 satisfy the requirements of 35 USC §112.

Thus, claims 1-20 satisfy the requirements of 35 USC §112 and are patentable thereunder. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

B. 35 USC §102 Claims 1, 6-8, 10 and 14-19

Claims 1, 6-8, 10 and 14-19 stand rejected under 35 USC. §102(e) as being anticipated by U.S. Patent No. 6,642,149, issued November 4, 2003 to

Suemasa, et al. (hereinafter *Suemasa*). With respect to claim 19, the Applicants respectfully disagree. In response, the Applicants have amended independent claims 1 and 10 to more clearly recite aspects of the invention.

Claims 1 and 10, as amended, recite limitations not taught or suggested by *Suemasa*. "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (*Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983))). Here, *Suemasa* does not identify each of the claimed elements as arranged in independent claims 1 and 10 so as to establish a *prima facie* case of anticipation.

Suemasa teaches a plasma processing method including a process chamber having two RF power sources 122, 128, coupled through two matching devices 120, 126, to a lower electrode 106. (*Suemasa* Fig. 1 and accompanying text.) However, *Suemasa* fails to teach or suggest a first sub-circuit and a second sub-circuit wherein the first and second sub-circuits each further comprise at least one non-variable set of series components and at least one variable shunt component connected to ground, and wherein a first match tune space defined by the first sub-circuit can be varied without affecting a second match tune space defined by the second sub-circuit, as recited in independent claims 1 and 10. Therefore, a *prima facie* case of anticipation has not been established because *Suemasa* fails to teach or suggest the limitations recited in claims 1 and 10.

With respect to claims 17-19, the Examiner asserts that since portions of the ranges taught by *Suemasa* overlap with portions of the ranges recited in the claims, that the claims are anticipated. The Applicants disagree.

The *MPEP* states that "[w]hen the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject

matter must be disclosed in the reference with sufficient specificity to constitute an anticipation under the statute.” (*MPEP* §2131.03 II)(citations omitted).

In the present case, *Suemasa* teaches that a first frequency may be greater than 10 MHz, is at most 200 MHz, and is preferably 100 MHz. (*Suemasa*, col. 2, ll. 49-56.) *Suemasa* further teaches that a second frequency, that must be lower than the first, is preferably at least 2 MHz and at most 10 MHz, is more preferably at least 3 MHz and at most 10 MHz. (*Id.*, col. 2, ll. 34-39.) However, *Suemasa* gives no specific examples of an apparatus configured to receive both frequencies as recited in the claims. In fact, wherein the present claims recite a frequency range of between about 50 KHz and about 14.2 MHz for both frequencies, *Suemasa* teaches that the first frequency is preferably 100 MHz and may be as high as 200 MHz.

Moreover, *Suemasa* teaches to keep a large range between the lower and higher frequency. Specifically, *Suemasa* teaches that it is desirable to keep the difference between the frequency of the high frequency power component and the frequency of the side band of the high frequency power component relatively large in order to prevent the first high frequency power component from entering into the second high frequency power supply mechanism 116 side, or the second high frequency power component from entering into the first high frequency power supply mechanism 114 side. (*Id.*, col. 7, ll. 8-20.) Therefore, *Suemasa* teaches away from an apparatus configured to match more closely spaced frequencies.

Accordingly, *Suemasa* fails to teach or suggest an apparatus wherein the first sub-circuit and the second sub-circuit are both configured to match the impedance of an RF signal having a frequency of between about 50 KHz and about 14.2 MHz, as recited in claims 17-19. Therefore, a *prima facie* case of anticipation has not been established because *Suemasa* fails to teach or suggest the limitations recited in claim 17-19.

Thus, claims 1, 6-8, 10 and 14-19 are patentable over *Suemasa*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

C. 35 USC §103 Claims 2-4, 9, 11-13, and 20

Claims 2-4, 9, 11-13, and 20 stand rejected under 35 USC §103(a) as being unpatentable over *Suemasa* in view of Japanese Patent Application Publication No 06-243992, published September 2, 1994 to *Deguchi, et al.* (hereinafter *Deguchi*). In view of the aforementioned amendments to independent claims 1 and 10, and the discussion of claim 19 above, the Applicants respectfully disagree. In addition, the Applicants have amended independent claim 9 to reflect the amendments of claims 1 and 10.

Independent claims 1, 9, 10, and 19 each recite limitations not taught or suggested by any permissible combination of *Suemasa* and *Deguchi*. The teachings of *Suemasa* are discussed above. *Deguchi* teaches a plasma processing device having a matching part 14 and an RF electric power supply part 12 in which the impedance is matched by changing an oscillation frequency of output electric power on the side of the RF electric power supply part 12. However, *Deguchi* fails to teach or suggest a first sub-circuit and a second sub-circuit wherein the first and second sub-circuits each further comprise at least one non-variable set of series components and at least one variable shunt component connected to ground, and wherein a first match tune space defined by the first sub-circuit can be varied without affecting a second match tune space defined by the second sub-circuit, as recited in independent claims 1, 9, and 10. Accordingly, the teachings of *Deguchi* can not be used to modify the teachings of *Suemasa* in a manner that yields the limitations recited in claims 1, 9, and 10. Therefore, a *prima facie* case of obviousness has not been established because the combination of *Suemasa* and *Deguchi* fails to teach or suggest the limitations recited in claims 1, 9, and 10.

In addition, *Deguchi* is not concerned with the interaction of multiple frequencies applied to a single electrode and thus further fails to teach or suggest a modification of the teachings of *Suemasa* that would yield a first sub-circuit for matching the impedance of a first RF signal having a frequency of between about 50 KHz and about 14.2 MHz generated by a first RF source to the impedance of the plasma and a second sub-circuit for matching the impedance

of a second RF signal having a frequency of between about 50 KHz and about 14.2 MHz generated by a second RF source to the impedance of the plasma, the second sub-circuit connected to the first sub-circuit to form a common output that is coupled to the electrode, as recited in claim 19. Therefore, a *prima facie* case of obviousness has not been established because the combination of *Suemasa* and *Deguchi* fails to teach or suggest the limitations recited in claim 19.

Moreover, as discussed with the Examiner during the teleconference on July 14, 2006, *Suemasa* and *Deguchi* are each assigned to Tokyo Electron Limited. The Applicants know of no other patents, applications, or publications by anyone else in the industry describing an apparatus as presently claimed, including any by Tokyo Electron Ltd. The Applicants submit that the lack of combination of *Suemasa* and *Deguchi* wherein each are assigned to the same owner is further evidence of the non-obviousness of the present claims.

Thus, claims 2-4, 9, 11-13, and 20 are patentable over *Suemasa* in view of *Deguchi*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claims allowed.

D. 35 USC §103 Claim 5

Claim 5 stands rejected under 35 USC §103 as being unpatentable over *Suemasa* in view of US Patent No. 6,887,339, issued May 3, 2005, to *Goodman, et al.* (hereinafter *Goodman*). In view of the amendment to claim 1, the Applicants respectfully disagree.

Independent claim 1, from which the above rejected claim depends, recites limitations not taught or suggested by any combination of the cited references. The patentability of claim 1 over *Suemasa* has been discussed above.

The Examiner cites *Goodman* to show that RF sources conventionally have a 50 Ohm output impedance. However, *Goodman* fails to teach or suggest a first sub-circuit and a second sub-circuit wherein the first and second sub-circuits each further comprise at least one non-variable set of series components and at least one variable shunt component connected to ground, and wherein a

first match tune space defined by the first sub-circuit can be varied without affecting a second match tune space defined by the second sub-circuit, as recited in independent claim 1. Accordingly, the teachings of *Goodman* can not be used to modify the teachings of *Suemasa* in a manner that yields the limitations recited in claim 1. Therefore, a *prima facie* case of obviousness has not been established because the combination of *Suemasa* and *Goodman* fails to teach or suggest the limitations recited in claim 1.

Thus, claim 5 is patentable over *Suemasa* in view of *Goodman*. Accordingly, the Applicants respectfully request that the rejection be withdrawn and the claim allowed.

CONCLUSION

Thus, the Applicants submit that all claims now pending are in condition for allowance. Accordingly, both further consideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Alan Taboada at (732) 935-7100 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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